SUM#17

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META-STABILITY AND THE DIAGONAL METHOD

AN INTERVIEW WITH TIMOTEJ PROSEN

It is hardly an exaggeration to say that an interview with philosopher Timotej Prosen has been a long time coming—to skip over a standout face in the Ljubljana intellectual bubble would have been a regrettable oversight, especially when they are engaged in the same kind of abstractions as us. Furthermore, Prosen was always great at anticipating future shifts of the field, such as Justin Murphy going big, by virtue of true insight, acute alpha, rather than by having some

insider information. Like what the Golden State Warriors head coach Steve Kerr said about the basketball magician Stephen Curry—"Don't let Steph fool you, he's not a humble guy"—Prosen's responses are (at times) uncompromising provocations full of reasoned irreverence, a breath of fresh air on the philosophical court. Because of his prudent boldness in diagonalizing seemingly discordant lines of thought, he is a true agent of reason.

ŠUM: We have always been committed to introducing new faces to Ljubljana's theoretical scene and shifting its philosophical landscape. After the 'accelerationist turn' and the Nick Land interview, [1] R. Scott Bakker was the new object of fascination and critique as well as the convergent point for our ongoing relationship. In what way has Bakker influenced your thinking and what has been your takeaway from his appeal to post-intentional philosophy? [2] How has he changed the way you think about philosophy and how do you see his role in retrospect?

Timotej Prosen: Certainly, Bakker's views were a breath of fresh air for my intellectual environment. I was very taken with his appeal to post-intentional philosophy and perhaps most impressed by his observation of a broad shift taking place regarding the very conditions of philosophy, that is to say, a change in how we think of ourselves and our place in the world. [3] This shift may be appreciated on two levels.

On a more readily apparent level, Bakker is describing the ever-growing discrepancy between (for lack of a better term) traditional philosophy and humanities on one side, and modern techno-scientific research on the other. The long-standing tensions between these two modes of thought are, of course, apparent to many. What is interesting about Bakker's account is his uncompromising insistence on the full extent of this conflict. The problem is not that modern science disagrees with how we traditionally conceive of the structure of subjective experience, the extent of man's autonomy, or the degree of man's normative value. It is that its methodologies undermine the basis

on which such issues were conceived of and discussed, and therefore seems to empty out the very meaning and significance of the categories of humanist thought. One can certainly observe this lack of common ground reflected in the prevalent mutual disregard or outright hostility between the two disciplines, and also in the occasional attempt at a dialogue or synthesis, which, I feel, often makes the chasm that much more apparent instead. In any case, Bakker's concern is not limited to the breakdowns in communication between the two academic disciplines.

This leads me to the second level of Bakker's framing of the problem, which is also what I find most fascinating in his work, namely how he uncovers this epistemological issue at the heart of a general civilizational predicament. The main thing to note here is that notions such as selfhood, intentional meaning or personal freedom are not just conceptual tools of analysis, confined to academic debates. They reflect a mode of behaviour, a way of interpreting and responding to the world, and more specifically, they reflect particular problems that they have evolved to handle. As practical heuristics, they are tied to specific psychological and social domains that they enable us to manoeuvre. As such, these notions are not in any direct opposition to scientific concepts, yet the latter do undermine our traditional self-conception, in some sense more devastatingly than by way of simple rebuttal. Instead of going toe to toe with the traditional bodies of knowledge, modern techno-science quite literally undermines the ground beneath their feet by reshaping the cognitive environments that used to support them. It bypasses the established categories of thought by either opening the access to traditional black boxes, such as the neural underpinnings of cognition, or transversing orders of magnitude and closing the distances which used to bound and stabilize different domains of our cognitive environment, such as the way in which informational technologies operate on us simultaneously on the level of sub-personal unconscious neural processes, on the level of individual psychological traits, and on the level of large scale social

trajectories and statistical regularities. Our conception of ourselves as autonomous and bounded agents in such a context is not only misplaced, but leads one ever further down what Bakker calls a *crash space*. [4] Blinded to the new features and informational depth of our world, we behave as any organism that finds itself maladapted to its environment; our actions and their consequences become wildly unpredictable, leading our cognitive structures to stumble and ultimately crash. The mere experience of profound disorientation in this context, which we are likely all too familiar with, should therefore prompt us to reconsider what we think we know about ourselves and our place in the world. But the final nail in the coffin of humanist thought for Bakker comes not from its disruptive incompatibility with techno-science, but from a fundamental asymmetry between the two. The latter is in some sense informationally richer and allows for a finer-grained description of the world. Especially fascinating in this regard are the scientific tools that enable us to study and engineer our cognition and behaviour even though, or perhaps precisely because, no reference is made to the notions of intentional meaning or selfhood as such. The ultimate subversion of our previous modes of self-apprehension is that we are more adequately conceived of within a framework where we can no longer recognize ourselves.

So that would be a brief sketch of Bakker's ideas which I found appealing. His perspective resonated with me on both aforementioned levels, that is, from the vantage point of my own attempts to manoeuvre the fragmented space of academic research, and from the level of my general experience of contemporary culture and its discontents. I often still find it useful, or at least soothing, to interpret the eccentricities of my academic environment along his lines, as a kind of blown-up version of an organism that finds itself severely maladapted to its environment, helplessly entangling itself ever deeper into the crash space. In all seriousness, however, I have begun to notice some issues with Bakker's approach. The basic problem I see here lies in the sharpness, or at least the specific framing of his

dichotomies, both in terms of the distinction between traditional philosophy and science, as in terms of the dichotomy between selfhood and intentional meaning on the one side and post-intentional agency on the other.

One way to flesh out this challenge would be to ponder whether man has ever really been ensnared in the notions of self-transparent consciousness or a stable and rigidly bounded selfhood, or at least whether we can really equate this self-conception with the entirety of his "pre-scientific" mode of thought. A closely related question is whether intentional meaning ever has been the ultimate horizon of our thought, or whether this notion may be taken as a specifically modern (mis)understanding of cognition. The notion of intentional meaning is explicitly introduced by both phenomenology and analytic philosophy as an attempt of grounding our cognitive faculties in some pre-established structure of subjectivity or in a pre-defined scientific method. In both cases, meaning is evoked as a kind of crystallization of essential and fixed characteristics of thought. I think an important lesson to be had from the aporias and subsequent development of both philosophical currents is that neither scientific categories nor cognitive agents can be circumscribed in terms of meaning lest their very rationality slip through our fingers. This realization has some bearing on Bakker's conception of the crash space as well. Only for a structurally predetermined agent, adapted rigidly to some specific environment, is an encounter with a phenomenon alien to its Umwelt fundamentally disruptive. I do not deny that such breakdowns occur, however the point is that our responses to them should be thought of as intelligent precisely to the degree that they are able to overcome them. In this regard, cognition as such may be thought of most generally as *plasticity* of a cognitive agent, that is, its ability to reconfigure itself in the face of perturbations and to incorporate new environmental structures. That being said, I am tempted to characterize thought as post-intentional by definition. Cognition proper has always been antithetical to "meaning" in the sense that it

involves the disruption and transcendence of any stable semantic structure. So, to my mind, if science does away with meaning, this does not imply some apocalyptic end of ourselves as we have always thought ourselves to be. Instead, it implies a deep congeniality between techno-scientific reason and human experience.

These are some of the reasons I have come to distrust Bakker's Sellarsian manner of drawing sharp distinctions between science and human experience. [5] Along similar lines, I have grown dissatisfied with Sellars' notions of the manifest and scientific image. I will not go into much discussion on this just yet, as I suspect we will circle back to it. Let me just add that I believe such dichotomies obscure the interrelatedness of the two poles. They do not do justice neither to our own plasticity nor to the open-endedness of scientific research, and so their stark opposition obscures the way we integrate with our cognitive environments and ultimately fails to account for how we ever got from the supposed confines of human experience to the scientific truths and procedures that transcend it.

That being said, I do not mean to deny that what we have been discussing has significant purport or that Bakker brings something new to the table. I still share Bakker's inkling that we are living through an important historical threshold and I agree that techno-scientific thought implies a profound reorientation of how we think of ourselves and our place in the world. The only thing I am sceptical of is that the process which fascinates Bakker really comes to its own through the lens of his philosophical framework. What we are seeing is not a simple convergence of scientific theory on the kind of beings that we really are and always have been. Instead, we are beginning to realize that we cannot probe into our minds without causing some change in their structure. In a sense, this is a genuine discovery about our nature, which is to say that we have to account for indeterminateness, or rather plasticity, as a positive feature of the kind of beings that we are. This is not to concede that human agency is irreducible to the order of natural phenomena, in fact just the opposite, it follows from the

realization that scientific observation itself is a kind of physical interaction and so that all self-apprehension is necessarily self-modification. This is why a scientific conception of ourselves does not pin our nature down to some specific description, but achieves the opposite result, that is, it produces an explosion of various new types of agency and mental content. In this regard, techno-scientific thought is continuous with human agency, although vastly expanding the scope of its plasticity. Moreover, it might be thought of not only as an intensification, but also as a qualitative shift in the way our cognitive processes unfold. To put it very briefly, I believe modern science may be raising our plastic capabilities to some sort of second-order level, where what is permutable are not just our capacities to solve certain tasks, but even the most biologically determined norms that frame such cognitive problems. In this regard, we might be approaching a mode of thought that is not only post-intentional, but also far removed from anything we would recognize as human. I find the consequences of this development both fascinating and concerning in much the same way and for similar reasons as Bakker's interest in the post-intentional future. So I definitely believe that Bakker is onto something, but I think that a different philosophical framework is needed if we are to get a better glimpse of what he is getting at.

ŠUM: Reza Negarestani recently mentioned [6] how he's also become dissatisfied with the Sellarsian distinction (and approach to the problem) that you've mentioned. It seems to us that another Manichaean distinction between the positive and negative feedback loop—propagated most notably by Nick Land—stumbles upon a similar problem. If we take your comment that "intelligence as a capacity for self-regulation is closer to the diagonal method than intelligence conceived as growth or a positive feedback loop", [7] in what way do you think that this notion of intelligence (optimisation) follows a different path than a full-on embrace of deterritorialization?

Timotej Prosen: Yes, I fully agree that we stumble upon a closely related issue here with Land. In fact, he invokes the distinction between the two types of feedback loops to draw just the kind of clear-cut demarcation that I have been criticizing, one which opposes the domain of what is properly human to some fundamentally alien realm beyond our grasp. However, I would like to point out that Land's reasons for making this demarcation are unique and based on an entirely different vantage point, one which I have grown ever more appreciative of and which could certainly add a level of depth to our discussion.

Firstly, I should note that one may depart from the Sellarsian dichotomy of the manifest and scientific image in more than one way. Up to now, I have been stressing the aspect of *plasticity*, the fact that images are inherently in motion, which continuously propels us from one to another through the process of discovery and conceptual innovation. Now, the other shift in perspective I propose is that we abandon the very *notion of image* in this context. Neither of the two modes of thought should be presumed to reflect some independently existing external domain. At the most fundamental level, cognition does not seek to represent reality as independent from it, but instead endeavours to formulate *principles of interaction and mastery* over it, which ultimately amount to methods of its own *self-organization*. This is implied by the very prefix of the term *techno*-science, which serves to point out that modern science deals not with classification of natural phenomena, but investigates instead the operational laws which coordinate the variables pertaining to a system in question with the parameters of its possible interactions with either the human experimenter or his technological apparatuses. The manifest "image" is of course no less technical in this regard and provides perhaps even more apparent examples of its self-organizational basis. For instance, earlier I have touched upon the notions of selfhood and autonomy, which, at least in certain contexts, engender and orient our behaviour

in such a way as to bring about those very features of our mental constitution which we might simply take as given.

In line with Land, I draw a great deal in this matter from the cybernetic movement. Their ideas, especially those of Wiener, [8] Ashby [9] and Varela, [10] establish far-reaching parallels between the fundamental structures of cognition and the principles of self-organization. The basic impetus behind their work stems from the realization that if we are to conceive of cognition as a causal process on par with other physical phenomena, we must rethink both our understanding of causal processes and our conception of what cognitive processes ultimately are and do. Whence the notion of *feedback*, otherwise known as circular causality. The idea here is that certain structures might produce effects, which in turn act on the structure, causing it to produce more effects of its kind, and so on, in a kind of closed recursive loop. A particular feature of such processes is that they are either highly stable or unstable, depending on whether we are dealing with positive or negative feedback. A *positive feedback* loop amplifies its effects, which are amplified again upon re-entry, and so on, such as when we move a microphone too close to a speaker so that it picks up its own transmission, quickly transforming the faintest sound into a shriek at maximum volume. Or we might think more generally of any kind of explosive chain reaction. A *negative feedback* loop has the opposite effect, where the structure counteracts any deviation of its inputs so as to maintain its effects at some steady value, such as a thermostat that raises the temperature when it drops below a certain threshold and lets it fall when it exceeds that threshold. This latter kind of feedback was especially interesting to cyberneticians because it gives us a handle on the functions of living organisms, such as homeostasis, but also a more general feature of a kind of “dynamic stasis” that seems to emerge on many levels of biological phenomena where all the components of some structure are liable to change, but their network of interrelations seems to retain some steady organization. Another crucial feature of negative

feedback loops is that they exhibit a sort of intelligent behaviour, even at the most rudimentary level. The way a thermostat maintains some desired temperature can be said to be goal-seeking, a feature even more strikingly exemplified by how Wiener's self-guided missiles pursue the enemy target. [11] On a more abstract level, we find that a negative feedback loop necessarily specifies some "preferred state" or attractor in phase-space, which it tends to occupy and, when perturbed or displaced in any way that does not break it down completely, always find its way back to. Rudimentary feedback processes have a limited number of rigid trajectories available for the pursuit of their preferred state, but others may be highly complex and even exhibit learning, such as Ashby's ultrastable homeostat, a general model of organismic intelligence, which is able to reshape its own trajectories of attaining stability in the face of new perturbations. Whatever the degree of plastic complexity, the basic outline of intelligent behaviour remains the same—it is drawn out by the topology of a closed self-maintaining loop where each cycle corrects for any deformations of its closure's very shape. So, we could conclude that intelligence necessarily takes itself as its most fundamental goal. The main point I want to get across here regarding the negative feedback loop is precisely this ingenious way in which cybernetics recursively interweaves the levels of the physical and epistemological around the notions of stability and self-organization so that stability may simultaneously be conceived of as a physical feature and as cognition's fundamental organizing principle, while the identity of a cognitive agent is construed as both the underlying goal and the operational achievement of its intelligence.

Although I am fascinated by this perspective of intelligent agency and its many consequences in contemporary cognitive science and robotics, I can also sympathize with Land's misgivings about it. He is thoroughly unwilling to accept that intelligence should be limited to orbiting a fixed axis of organismic identity and that it should remain subservient to the ultimate goal of preserving its vital structures. This is why he looks to positive feedback mechanisms, otherwise known as

runaway processes, as a way to escape the shackles of any stable structure which might warp cognitive processes into forming a closed circle. [12] His idea of emancipation of thought is to enable it to diverge from its starting conditions and plunge into never-ending transformations. Land's move of aligning himself with the basic dynamics of capitalist production makes perfect sense in this regard, as does his closely related affinity for techno-scientific thought. Both Marx's formula for capital and the basic "logic of scientific discovery" describe processes which entail a peculiarly brutal disregard for the organization of their constituents and, more importantly, continuously transcend even their own respective organizational principles. Whether we are dealing with scientific statements, which explicitly invite all attempts at their falsification, or with an economy concerned primarily with optimizing the methods of its productive capacities, we can discern another kind of basic outline: these are the processes whose primary goal or tendency is to move beyond themselves.

Now, the first issue I take with Land is whether such processes are indeed best thought along the lines of a positive feedback loop. It seems to me that he has overlooked the basic reason why cyberneticians did not take central interest in the notion, namely the overwhelming tendency of such mechanisms to self-destruct. Concrete implementations of positive feedback loops cannot indefinitely continue to diverge from their initial conditions. They are either rigidly plateaued by the larger structure which engendered them, as with microphone feedback, or they cause a breakdown in the structure, at which point they eliminate themselves, as is the case with explosions. To be clear, I am actually not pointing this out as a kind of *reductio ad absurdum* of Land's point of view. In fact, it certainly does not seem excluded that techno-capitalism as we know it today is not only unsustainable, but undermines the very conditions of its continued transformations, although this is certainly not the conclusion that Land is attempting to make by invoking the positive feedback mechanism. In any case, I do not have any worked out convictions on

this matter. What we are talking about is of course an enormously complex issue, and it might be impossible to tell at this stage. It is a problem that we are most likely going to live through concretely in the coming future.

My second issue with Land is more basic and has to do with his Manichaean contradistinction between the two principles, as if the relation between them was that of a kind of deathmatch between fundamentally different types of agents. Again, there is a grain of truth to this. It saddens me to see all the signs pointing in this direction, namely that our civilizational conflicts in the near future are going to be predominantly organized precisely along this axis, dividing the desperate bids for identity-based stability from the policies of surrender to the self-undermining tendencies of techno-capitalism. Still, I am convinced that we may find better ways of framing the issue lying dormant. My initial reason for the dissatisfaction with the dichotomy of stability and runaway processes was coming from my own oscillating affinity for the two principles, always accompanied by a visceral reluctance to fully align myself with either, a sense that the single-dimensional opposition between the two unduly restricts the kind of agency which I am interested in. This intuition is, I think, partly substantiated by the cybernetic approach, which enables us to treat such incompatible dichotomies as component variables of a higher-dimensional system whose full functioning or even its capacity to oscillate between its partial aspects cannot be explained by or attributed to any single dimension of its phase-space. I believe this perspective is needed to get a grasp not only on our interface with other kinds of agents and processes, but also on the basic outlines of human agency as such, which does not seem to me to be necessarily centred on biological or indeed any kind of predetermined point of identity. It may become entrenched in various sorts of personal or group identities, and in relation to those it may display all the regulatory behaviours and intelligence traits of a closed negative feedback loop. But what is particularly striking, although, of course,

not necessarily unique, about human agency is that it may also break out of its structural closure, readjust the centre of its orbit, or even become aligned with processes utterly tangential to it, become invested in, or rather, possessed by, inhuman entities which may in turn be quite indifferent to its internal organization.

This leads me to suspect that the notions of feedback do not suffice and that we may need to look for another kind of basic outline of cognitive agency. What we stumble upon here is not reducible either to the geometry of a closed circle nor to one of linear divergence. The cognitive architecture I am interested in must be drawn out in a higher dimensional space to explain how such agency might appear from a certain perspective to be self-affirming, while from another point of view, all we see are open-ended transformations, and to come to terms with the paradoxical congeniality of self-organization and self-transcendence. In this respect I believe I am actually perfectly in line with Land's diagonal method—my point being precisely that we must not take the two cybernetic notions as orthogonal, but try to cut diagonally across the false dichotomy.

ŠUM: Land has a beautiful passage in the late 90s Wired UK interview [13] where he states that "organization is suppression". In response to what you've just said, we would like to know more about the diagonal method and the false dichotomy that you've highlighted. First, does this also relate to the potentially problematic reasons/causes distinction that neorationalist philosophers have taken for themselves? And second, do you think Gilbert Simondon's work carries the capacity to still shed some light on the topic? Will he in the end really be regarded as the ultimate accelerationist philosopher, as we speculated (and joked) when we came full circle in a previous private conversation?

Timotej Prosen: Apropos Land's notion of diagonalization, he takes it to be a kind of general method for breaking out of established

dichotomies by way of affirming a paradoxical cross section of some dichotomy pair. Land points out a good example of such conceptual innovation in Kant's notion of the synthetic a priori. [14] Here we start with two opposition pairs—analytic/synthetic and a priori/a posteriori, which seem to run parallel and are taken to be homologous in nature; the very notion of analyticity is taken to imply the a priori, and the synthetic is in turn seen as automatically taking us into the realm of a posteriori. The next step is to dissociate the two pairs and to draw them out as orthogonal to each other, so that they constitute the dimensions of a plane. The final step is to cut diagonally across the plane by arguing for a paradoxical congruence between diagonal poles, in this case, for the possibility of statements which are both synthetic and a priori. A very similar schema may be applied to my problematization of Land's contradistinction between the two kinds of feedback loops. The crucial thing which I tried to argue for in the previous response is precisely that we are not dealing with a simple opposition between two kinds of systems or between incompatible principles of self-organization and self-transcendence. Instead, we are facing a more complex problem-space which can be charted on at least two axes. On the one hand, we are considering the discrepancy between systems which remain bound to some point of identity of their essential characteristics and are therefore static, and systems which diverge from their initial conditions and may be termed dynamic. On the other hand, we are interested in the contradistinction between the capacity of some systems to counteract disruptive perturbations, that is to say, self-organizing systems, and the kinds of processes which tend to break down as they unfold and may be termed self-annihilating. My point of interest here is precisely whether this framework may be traversed diagonally—whether we may conceive of such a thing as *dynamic self-organization*.

Of course, such a diagonal schema must be understood merely as a re-framing of the problem, not the solution itself. I suspect that a diagonal approach has to be worked out concretely in relation to the

specific problem-space we are attempting to traverse; in any case, with regard to what we are discussing here, I have found Kant's position, as well as many approaches of other diagonally inclined philosophers, unsatisfactory. Whence my particular interest in Simondon, who has, to the best of my knowledge, addressed this very issue most explicitly and convincingly.

But before we delve deeper into that, let me first turn to the question regarding the reasons/causes distinction. I am certainly not of the opinion that all philosophical antagonisms should be treated diagonally, and we have finally stumbled upon a topic where my position is more straightforwardly one-sided. I take the causal level to the more fundamental of the two, in the sense that any "space of reasons" should be understood as causality of a particular kind. However, I would not argue for this in any eliminative materialist vein akin to Bakker's, where the reasons we consciously articulate are seen as nothing more than epiphenomenal "rationalizations" of an underlying causal process which is taken to be the sole driver of our behaviour. I do not deny that we, to use Brandom's term, engage in games of giving and asking for reasons nor that such games are indispensable even to our causal apprehension of the world. [15] But I disagree with Brandom that our capacity for rule-governed exchange of reasons should be taken as a complete picture of what cognition is. My insistence on the physical nature of cognition stems from the conviction that games of giving and asking for reasons are only a partial aspect of any intelligent behaviour. A more complete view of cognition would recognize such games as specific phases of a process of producing particular physical effects—of either exerting control over the environment or plastically adapting to it. This point of view is needed to account for why the "rules of the game" of giving and asking for reasons may be very different for agents of various cognitive architectures. An agent primarily concerned with maintaining its structural integrity exhibits clear limitations on the degree to which it is able to reasonably update its beliefs, particularly those which

pertain to its own nature and place within the world. Moreover, as Friston points out under the heading of *active inference*, it may be considered quite rational for such agents to refuse to update their convictions in light of new evidence and attempt instead to practically ensure that the empirical data conform to their theories about the world. [16] All this may be sharply contrasted to deep structural plasticity and a certain unstable or chaotic nature of the kinds of agents whose rules of rational conduct are exposed to constant permutations. In my opinion, there can be no rationally communicative exchange of information between such fundamentally differing cognitive agents, although one may, from a certain standpoint, recognise both as specific instantiations of intelligence.

These are some of the motivations for my inclination towards some sort of physicalism or naturalism, one that does not disregard or subtract anything from our discursive practices of giving and asking for reasons, but instead adds something to our perspective, namely a way to appreciate the varieties of their organization. Ultimately, I am looking for the kind of naturalist framework that would enable us to pass between and beyond them.

This is where Simondon [17] enters the picture for me. His understanding of the elementary nature of cognition, which he terms transduction, is pointed precisely in this direction—namely that cognitive procedures stem from some particularly embodied cognitive architecture, while the recursive operation of thought is able to modify its physical instantiation and move the cognitive agent along all sorts of different trajectories.

His notion of transduction is on some level of course a play on the classical terminological dichotomy of induction and deduction. Cognition, for him, cannot proceed by pure deduction, as if it operated simply by externally manifesting some internally given set of principles and procedures. Neither can it be purely inductive, allowing itself to be completely overwritten by the patterns of the external world. Instead, thought is conceived to be the interface between

interiority and exteriority, a simultaneous two-way passage from one to the other. It involves internal standards or "categories" in reference to which the external reality is classified and controlled, but also the process of reshaping its internal structures as they come in contact with the external domain.

The epistemological aspect of transduction is, just as with cybernetics' notions, accompanied by an ontogenetic aspect. On this level, transduction denotes the process by which a specifically embodied agent functions by recursively operating on its own structure. Any such agent can be said to possess a "structural germ", or a kind of blueprint of itself, in reference to which it may continually propagate its structure and which defines its structural interiority, as well as its distinctive procedures of interaction with the external environment. A structural germ is thus externally expressed in processes through which the agent attempts to subdue the environment to its organization; however, this peculiar interaction may also work in the opposite direction, with exteriority affecting the agent's structural germ and steering the trajectory of its permutations.

This general characterization of transduction already contains some implications for Simondon's solution to our diagonal problem—his theory of *dynamic self-organization*. But we may unpack those implications a little bit further by sketching out the three major modes of transduction where we encounter something very close to the now familiar geometry of the closed circle and linear divergence, as well as something entirely new.

Simondon finds the most rudimentary form of transduction already at work in inorganic nature, for example in the processes of crystallization. It is in fact from the domain of chemistry that he adopts the notion of a structural germ, as it was introduced to account for the initial phase of crystallization of solids. The notion in this context is based on the insight that a given chemical solution might allow for a variety of different kinds of molecular crystalline forms, but once any one of those possible forms emerges, it will determine the

molecular build-up of the entire subsequent process of crystallization. A proto-crystalline form of this kind may be said to “germinate” the entire solid structure, as it proliferates in a given chemical solution to the exclusion of all the other possible forms of its molecular build-up. Such a process has the shape of outward expansion, with the initial structural germ in the centre, which transduces its structure to a surrounding outer layer, the latter engendering another layer further out and so on. It is interesting to point out that we encounter here another kind of process which pushes outward and away from its initial conditions, whose overarching tendency is to expand its periphery in a linear fashion ever further out from its structural centre, and is in that respect not unlike an explosive chain reaction. All such processes share the propensity to amplify their transductive effects, but always in a one-directional linear fashion, thus exhibiting not only accelerative dynamism but also a certain rigidity, most readily apparent in crystalline solids.

Another wholly different kind of transduction may be encountered in the domain of living organisms, where we usually find a relatively stable periphery in the form of a protective membrane, which encapsulates the encoding for its structural characteristics in some equally relatively unchanging form, such as the genetic material. Here, the peripheral membrane and the internal core enter into a circular, mutually stabilizing relationship—the membrane allows for the unperturbed functioning of its internal structures, while the internal metabolic processes continually regenerate that membrane. In this instance, the structural germ does not propagate its transductive capacities indefinitely outwards (except in specific pathological cases, such as cancer). Instead, the organism always remains bound to the same central structural germ. Transduction on this level therefore denotes the processual emergence of what may seem as a fundamentally static agent, where all dynamics are organized to maintain some fixed point of identity. The fundamental impetus of

living beings might thus be said to prevent change in their organization.

This conclusion, however, holds true just for a very limited aspect of organic life, according to Simondon. To see why, we may only need to look a bit closer at the circular structure of a protective membrane and regenerating structural germ. Such processes may exhibit stability, but they also contain the potential for a particularly thoroughgoing plastic transformation, which is lacking in processes of linear amplification. Since organisms remain bound to a central locus of transduction, its organizing capacities simultaneously operate on the entire structure, and not just from one peripheral stage to the next. If the structural germ were to significantly change, such as it might initially through random genetic mutations, what we get is an entirely new kind of organism, with both a different internal structure and new methods of self-organization. So, we may observe a peculiar dynamics of self-organization already on the level of the evolution of various phenotypes, although this is only one instance of such a process and one that is particularly slow and wasteful so that its dynamic aspect only becomes discernible over vast periods of time. However, for some organisms it might become beneficial to be able to modify their structural germ even throughout the course of their lifetime. This can be observed already on the genetic level, but Simondon points to other possible instances as well. On the level of multicellular organisms, the function of a structural germ is partly realized by the nervous system, which displays a great amount of plasticity. Without going into too much detail, let me conclude that Simondon observes on all these levels a peculiar outline of dynamic self-organization, where a system is organized around some parameter, with the parameter being liable both to outside influence and to the operations of that system itself.

These characteristics are encapsulated on the most abstract level by Simondon's conception of *metastability*, which he adopts from the field of dynamical systems theory. Already in this context, it forms an alternative to more rudimentary notions of stability or instability, as it

denotes systems with multiple attractors, or structures, which might in different circumstances converge on different points of stability. Simondon further stresses the possibility that the system might operate on itself so as to continually modify the structures which define the parameters of its attractors. In this regard, he clearly opposes both the conception of cognition as a positive and as a negative feed-back loop. Intelligent processes neither blindly diverge from their initial conditions nor do they seek trajectories to a predetermined attractor, but simultaneously coordinate both the methods and parameters of their organization.

I believe such Simondonian insights get us very close to a diagonal transversal stated above and a satisfactory conception of intelligence as dynamic self-organization. And they might also substantiate the joking remark of Simondon being the ultimate accelerationist philosopher, that is to say, a thinker concerned primarily with processes which not only continually evolve but also actively organize the conditions of their continued transformations.

ŠUM: In a conversation on Metelkova [the only remaining squat in Ljubljana], you said that for you a better conception of the body without organs is simply the extended mind (thesis or theory). Would you be able to elaborate on that—we have a sense that this kind of equivocation could potentially rub our fellow Deleuzians the wrong way—and potentially also touch upon your recent paper on the topic. How does the extended mind theory enter into the picture you sketched in your previous answers and what do you believe is its most fundamental part?

Timotej Prosen: Well, let me first point out that the interrelatedness of the body without organs and the extended mind can only be appreciated from a specific understanding of both, and I admit that my attempt to bring the two notions in line is not without some tensions. The extent to which such tensions are unacceptable from a properly

Deleuzian standpoint is also the extent to which I depart from his position. However, I still see the confrontation between the two frameworks as highly productive for two reasons. On the one hand, the body without organs may be invoked to indicate the specific conception of the extended mind which I find most pertinent—it was, in fact, recent developments in the field of extended mind research which caused a turn ever closer to some of Deleuze's ideas, and I, for one, certainly hope that this direction of research is to be pursued further. The other reason is that such a framework of extended mind comes equipped with notions that may help us approach the problematic of the body without organs from a new angle and perhaps take steps beyond the Deleuzian horizon.

Let me start with the latter point. Deleuze and Guattari define the body without organs as the domain of systems lacking all organization, or the limit which is approached by the process of deterritorialization. It is a domain of decoded flows, that is, of processes which do not follow any closed channel of organized interaction and therefore act non-sequentially, simultaneously affecting the entire system. The body without organs is a system stripped of all organization, a body emptied out of organs, that is to say, of any parts which might steer the flows of internal processes in any specific direction, instead allowing for a simultaneous proliferation of its currents across the entire domain and in all directions at once. [18]

As such, the body without organs seems to belong to an order entirely different to that of any kind of organized agency. In fact, Deleuze and Guattari note that that excessive proximity to a body without organs always threatens us with violent "dismemberment" and death. [19] However, the authors also observe that some agents or machines may enter into a constitutive relationship with it. Human social formations, for instance, may be organized against the backdrop of the body without organs, be they stabilizing or expansive and dynamic, structured either around territorial regulation, despotic control or the movement of capital. In each case, the body without

organs functions as a threshold of disorganization through which human beings themselves are compelled to pass, as it constitutes the horizon for the process of re-composition of their "dismembered" productive and regulatory capacities, along with their various artefacts and infrastructures, into the newly emerging social bodies.

So, there is a destructive as well as a constructive dimension to the body without organs. Moreover, it may be viewed either as a foreign body, absolutely alien and detrimental to any kind of organized agency, or we can conceive of it as a phase internal to some processes of organization, that is to say, as a plane of immanence allowing for continuous assembly and disassembly of its constituents. Of course, I am disposed towards the latter view, but for that, we need to account for the intersection of organisms and bodies without organs; we need to get a handle on just how some organized structure might enter a phase of the dissolution of its internal structures only to emerge anew by recomposing the circuitry of its organization. This is where I would look to the extended mind theory. To be sure, Simondon's notions of metastability and the transindividual already go a long way in dealing with this problem. The theory of extended mind does, however, develop the aforementioned Simondonian insights significantly. Two such findings are especially pertinent for us here, having to do with the dynamics of the interchanging phases of organization and disorganization, and with the way their pulsating movement may carve out entire planes of consistency, entangling us with all sorts of social and technological assemblages.

The core idea behind the notion of the extended mind is that our minds extend beyond the confines of our brains or beyond the bodies of individual persons. But what exactly does this imply? The first thing I should note with regard to the field of the extended mind research is that it comprises different approaches, most of which are in my opinion led astray by the very notion of *mind* and the dualist and representationalist legacy that it carries with it. The idea here is to identify some internal representations or *engrams* and then to show

how representations external to the nervous system, called *exograms*, may play similar or homologous roles in cognition. [20] Admittedly, one can point to a staggering number of such exograms, ranging from natural language to the most advanced information processing technologies, but even all this does not do justice to the full scope of our extended minds. The research which I am more interested in proceeds from a very different conception of mind, defined as a body's capacity to act on its environment and react to perturbations from it, that is to say, a body's capacity for self-organization. If we start from these presuppositions, the mind by definition cannot overstep the boundaries of its embodiment, because at its most fundamental, the mind *is* nothing but the recursive loop which encircles and consequently defines the very physical outlines of some agent. However, as soon as the process which defines the boundaries of some physical system can be said to be intelligent, such boundaries begin to exhibit plasticity. To speak of extended mind in this regard is to speak of the process by which some bodies expand and reshape their boundaries.

There are two distinct directions that such a boundary-expanding process might take, and they correspond to the two theoretical frameworks currently dealing with these kinds of processes. On the one hand we have enactivist cognitive science [21] which deals with the kinds of self-organizing systems that maintain some of their characteristics throughout their development. Such systems are said to have a two-partite structure; [22] one essential aspect which remains unchanged and another, transitory aspect which might be said to undergo transformations precisely in order to keep the essential aspect in place. It is assumed that those characteristics which stay in place are somehow essential to the agent's physical structure, while those which are set to be transitory are its sensory-motor capacities of interaction with the environment. The sensory-motor patterns are left undisturbed as long as they are sufficient to maintain the essential structures of some agent, but compelled to change as soon as the

essential features go out of bounds, and set to continuously undergo transformations for as long as they do not achieve some new sensory-motor pattern of counteracting the perturbation of essential structures. Such a two-partite cognitive architecture accounts for a wide range of learning phenomena, as well as our ability to utilize various sensory and motor prostheses. In fact, by recourse to these basic enactivist principles, our ever greater reliance on technological augmentations of our sensory and motor capacities may be said to constitute a particular kind of learning, one which follows naturally from agents with a certain degree of structural plasticity.

This idea is substantiated by Leroi-Gourhan, [23] another important precursor to the notions of the extended mind. He finds that the evolution of hominid cerebral structures runs in close connection with the appearance of bipedalism and a corresponding distinct loss of specialized morphology of the limbs. Through this process, the hand becomes “specialized for universality”, which is to say that it loses all traits which would give it an edge for specific tasks, such as piercing, slashing or digging, and becomes adapted mainly for the gripping and handling of various tools that replace the bodily appendages in performing specific tasks. What particularly strikes Leroi-Gourhan is not so much the increase in general scope of human intelligence, but the specific nature of this generality, which has to do with the expansion of self-organizing capacities to include extrabodily appendages. His conclusion is that through the process of hominid evolution, the central concerns of human intelligence have become the ability to temporarily incorporate various technical assemblages, the capacity to smoothly transition between them and the incentive to recursively operate from one domain of technical appendages to the next, such as with the creation of tools designed for the manufacture of other tools. The latter trait is especially interesting to Leroi-Gourhan; he sees it as setting our species down a peculiarly thoroughgoing path of gradual externalization of bodily organization, starting with the most peripheral appendages, which replace the

functionality of bodily parts such as claws or teeth, and later moving further into the bodily organization, with the force and coordination of human movement being partially redelegated from human muscle to other animals and later to machines. This process culminates in our time with the advent of information technologies, which externalize to an ever-greater extent even our "mental" capacities for storage and processing of information. There is one final step left to take according to Leroi-Gourhan, which would bring this process to its ultimate conclusion by externalizing the last internally embodied aspect of human organization. This would be achieved by producing an externalized equivalent of human affectivity, understood as the ultimate source of action coordination and self-organization. This would amount to dislodging the very centre of human self-organization from internal biological structures to external artifacts.

Now, I would claim that an externalization of human affectivity has already taken place, although not as the final step in the ever-increasing expansion of our technical capabilities, but as a qualitatively different kind of mental extension, which accompanies each consecutive step of our technical evolution. My reasons for this claim should become somewhat obvious as soon as we clarify the notions of *affectivity* and *technicity* by recourse to the two-partite schema of our cognitive architecture. Our technical capacities can of course be placed on the side of permutable patterns of sensory-motor coordination. Our technical knowledge has the form of relegating specific motor responses to specific sensory stimulation and our technical equipment can be treated simply as another link in the circuitry of our motor effectors. Affectivity, on the other hand, fits neatly on the other side of the schema; it determines which characteristics are essential for some agent, and in recourse to those it provides the measure for success and failure of technical operations. This is in line with our everyday understanding of emotions; they are usually thought of as centred in the body, with their pleasurable and painful characteristic indicating either beneficial or detrimental

somatic changes. But emotions also play a crucial role in sculpting our behavioural patterns, as those same aspects of pleasure and pain either motivate or inhibit the specific ways we interact with our environments. I think such a schematic definition suffices to show why affectivity should elude the progress of purely technical externalization. Affectivity eludes it because it necessarily remains fixed at its very centre. To speak of purely technical progress would thus imply an outward radial expansion of "means" which remain bound to some rigidly determined core which determines their "ends".

I believe, however, that we are hardly ever faced with simple technical progress in this sense of linear development steadily advancing from some fixed point of reference. Moreover, I think we find a significant degree of plasticity not only on the level of the periphery of our sensory-motor interface with the world, but also on the level of the affective core of our cognitive agency. In fact, the two dimensions of structural plasticity are closely related in my opinion, and consequently we find that the process of technical augmentation of our sensory-motor capacities is always accompanied by the emergence of what I would term *exoaffects.* The notion of an exoaffect can be worked out by recourse to the second of the two approaches of the extended mind research, which I mentioned earlier, namely, predictive processing and the free energy principle. [24] Without going into too much detail let me just point out that the framework is compatible with the two-partite schema that I have been relying on so far, but allows for permutability and mutual influence between the level of sensory-motor patterns and the level of the affective parameters of behaviour. This framework therefore gives us an intuitive handle on the affective dimension of our behaviour, while at the same time overcoming some of the shortcomings of the "organism-centred" view of affectivity. I propose the notion of exoaffect in order to explain how the affective parameters which steer the behaviour of some agent are compelled to change in line with how the structural make-up of that agent is expanded or reshaped. The notion also

accounts for the simple observation that constituents of our environment can act as external loci of affective significance, which often overpower the binds that tie our affective responses to the well-being of our biological bodies. Exoaffectivity should therefore be taken both as entirely distinct from and complementary to the externalization of perceptive and motor capacities. Whereas the latter have to do with the various methods of control and self-organization, externalized affects reshape the basic parameters of just what is being organized.

The two basic facets of extended mind thus involve both the process of organization and disorganization and the relation between them should render conceivable how even the latter process might be constitutive to some types of agency. The notion of extended mind may consequently also provide a deeper understanding of how complex socio-technological assemblages are formed. To circle back to Deleuze, we are now in a position to better grasp how territorial boundaries might become the most distinctive features of certain social groups, more vigorously maintained and defended than even the most vital internal organization of their constituents. Or we may better understand how the body of a sovereign can become invested with a certain sacred dimension, the affective effects of which are precisely such as to enable a single constituent to exert central control over the entire social body. These are the two examples where the socio-technical infrastructure and exoaffects couple in such a way as to achieve relative stability. Then there is also the case of capitalist societies fuelled by a peculiar dynamism between the two aspects, as the technical production of commodities begins to explicitly involve the engineering of corresponding exoaffects, always in such a way as to give rise to further cycles of production, the reciprocal feedback loop between the two thus always threatening to quite literally spiral out of control.

I have provided here of course only the faintest outlines of some situations which call for the mode of analysis provided by the notion of

the extended mind. I believe there are many interesting implications of these views yet to be fleshed out, which is what I am currently preoccupied with. I am especially fascinated by the question whether contemporary cognitive science itself can be taken as a process which feeds back into the structure of our agency to produce a qualitative shift in our organization. In this respect, my interests are still very closely aligned with those of Bakker, as I briefly pointed out in my response to the first question, although they stem from different starting points, which have by now hopefully been adequately sketched out. My interest in cognitive science does not stem from the belief in its capacity to reveal an image of ourselves as we truly are; such an image will always be unattainable due to our structural plasticity. On the contrary, I am fascinated by cognitive science as the ultimate feat of this very plasticity. What seems to be happening is that we are on the verge of fully closing the circle between the technical and affective aspects of our agency. These two aspects have profoundly affected and constrained one another throughout the whole of human history, but now the newfound possibilities of observation and manipulation of our mental architecture bring the two realms ever closer to a complete short circuit. What happens when the calibration of affective parameters of some agent truly becomes a technical problem for that very agent? Does this lead to a cognitive crash-space or even a violent meltdown of any organized agency? Or does it lead to a cognitive architecture of not as yet conceivable dimensions? With regard to such questions, I am still very much in the dark, so instead of attempting to further elaborate on this matter, I will simply conclude with a quote by Deleuze and Guattari, which I think applies well here: “we haven’t seen anything yet.” [25]

1 BAUER, M. & TOMAŽIN, A., “The Only Thing I Would Impose is Fragmentation—Interview with Nick Land”, in: *ŠUM*, 7, 2017, pp. 801–821,

http://sumrevija.si/issues/sum-7/.

2 KRAŠOVEC, P. & BAUER, M., “Scarlett Johansson Leaps to Your Lips: An Interview with R. Scott Bakker”, in: *ŠUM*, 9, 2018, pp. 1073–1100, http://sumrevija.si/en/issues/sum-9/.

3 BAKKER, S., “Back to Square One: Toward a Post-Intentional Future”, in: *Scientia Salon*, 2014.

4 BAKKER, S., “On the Death of Meaning”, in: RUDRUM, D. (ed), *New Directions in Philosophy and Literature*, Edinburgh: Edinburgh University Press, 2019.

5 Bakker, S., “Exploding the Manifest and Scientific Images of Man”, in: *Three Pound Brain*, 2018, https://rsbakker.wordpress.com/2018/04/02/exploding-the-manifest-and-scientific-images-of-man/.

6 NEGARESTANI, R., “Humanism & Its Discontents”, *YouTube*, https://www.youtube.com/watch?v=djbORhEc5Fw&t=20s.

7 Private correspondence between Timotej Prosen and Enea Kavčič (June 2021).

8 WIENER, N., *Cybernetics, or control and communication in the animal and the machine*, New York: MIT Press, 1961.

9 ASHBY, R., *Design for a Brain: The Origin of Adaptive Behaviour*, London: Chapman and Hall, 1960.

10 VARELA, F., “Steps to a Cybernetics of Autonomy”, in: TRAPPL, R. (ed), *Power, Autonomy, Utopia*, Boston, MA: Springer, 1986.

11 WIENER, N., *The Human Use of Human Beings: Cybernetics and Society*, London: Free Association Books, 1989, p. 25.

12 LAND, N., “Teleoplexy: Notes on Acceleration”, in: *Logos*, 28, Russian Federation, 2018, pp. 21–30.

13 LAND, N., “Organisation is suppression, Wired UK interview”, in: *Isegoria*, 1997, https://www.isegoria.net/2018/08/organisation-is-suppression/.

14 LAND, N., “Note on Diagonal Method”, in: *Zero Philosophy*, 11/12/2021, https://zerophilosophy.substack.com/p/note-on-diagonal-method/.

15 BRANDOM, R. B., *Making it Explicit*, London: Harvard University Press, 1994.

16 FRISTON, K., “Life as We Know It”, in: *Journal of The Royal Society Interface*, 10, 86, 2013.

17 SIMONDON, G., *Individuation in Light of Notions of Form and Information*, London: University of Minnesota Press, 2020.

18 DELEUZE, G. & GUATTARI, F., *Anti-Oedipus: Capitalism and Schizophrenia*, Minneapolis: University of Minnesota Press, 1983.

19 DELEUZE, G. & GUATTARI, F., *A Thousand Plateaus*, London: Bloomsbury Academic, 1988.

20 SUTTON, J., "Exograms and Interdisciplinarity: History, the Extended, and the Civilising Process", in: RICHARD, M. (ed), *The Extended Mind*, New York: The MIT Press, 2010, pp. 189–225.

21 DE JAEGHER, H. & DI PAOLO, E., "Participatory sense-making: An enactive approach to intersubjectivity", in: *Phenomenology and the Cognitive Sciences*, 6, 4, 2007, pp. 485–507; DI PAOLO, E., "Extended Life", in: *Topoi*, 28, 1, 2008, pp. 9–21; VARELA, F. J., "Organism: A Meshwork of Selfless Selves", in: TAUBER, A. I. (ed), *Organism and the Origins of Self*, Boston Studies in the Philosophy of Science, 129, Dordrecht: Springer, 1991.

22 DI PAOLO, E., "Organismically-inspired robotics: Homeostatic adaptation and natural teleology beyond the closed sensorimotor loop", in: MURASE, K. & ASAKURA, T. (eds), *Dynamical Systems Approach to Embodiment and Sociality*, Adelaide: Advanced Knowledge International, 2003.

23 LEROI-GOURHAN, A., *Gesture and Speech*, London: The MIT Press, 1993.

24 CLARK, A., "How to Knit Your Own Markov Blanket: Resisting the Second Law with Metamorphic Minds", in: METZINGER, T. & Wiese, W. (eds), *Philosophy and Predictive Processing*, MIND Group, 2017; KIRCHHOFF, M. & KIVERSTEIN, J., *Extended Consciousness and Predictive Processing: A Third-wave View*, London: Routledge, 2019; RAMSTEAD, M. J. D., KIRCHHOFF, M. D., CONSTANT, A. et al., "Multiscale integration: beyond internalism and externalism", in: *Synthese*, 198, 2019, pp. 41–70.

25 DELEUZE, G. & GUATTARI, F., *Anti-Oedipus*, p. 240.

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